

WHAT IS CLAIMED IS:

1. 1. An energy beam guide, comprising:
  2. a first region having a first refractive index, said first region having an energy beam receiving end and an inclined first boundary opposing said energy beam receiving end;
  3. a second region having a second refractive index that is less than said first refractive index, said second region sharing said first boundary with said first region, and having a declined second boundary opposing said first boundary, where a predetermined distance separates said first and second boundaries; and
  4. a third region having a third refractive index, said third region sharing said second boundary with said second region.
5. 2. The energy beam guide of claim 1, wherein said second refractive index is larger than said third refractive index.
6. 3. The energy beam guide of claim 1, wherein said second refractive index is less than said third refractive index.
7. 4. The energy beam guide of claim 1, wherein said energy beam guide forms part of a detection cell of an electrophoresis system.
8. 5. The energy beam guide of claim 4, wherein said third region defines a detection portion of said detection cell.
9. 6. The energy beam guide of claim 1, further comprising an excitation source and a detector.
10. 7. The energy beam guide of claim 1, wherein said first refractive index is in a range from 1.47 to 1.61.
11. 8. The energy beam guide of claim 1, wherein said second refractive index is in a range from 1.46 to 1.52

1 9. The energy beam guide of claim 1, wherein said second refractive index is 1.52.

1 10. The energy beam guide of claim 1, wherein said second refractive index is 1.472.

1 11. The energy beam guide of claim 1, wherein said third refractive index is in a range  
2 from 1.33 to 1.46

1 12. The energy beam guide of claim 1, wherein said third refractive index is 1.41.

1 13. The energy beam guide of claim 1, wherein said first region is an optical adhesive.

1 14. The energy beam guide of claim 1, wherein said first region is a liquid index matching  
2 fluid.

1 15. The energy beam guide of claim 1, wherein said second region is selected from a  
2 group consisting of glass and plastic.

1 16. The energy beam guide of claim 1, wherein said third region is a migration medium.

1 17. The energy beam guide of claim 16, wherein said migration medium is a polymer.

1 18. The energy beam guide of claim 1, wherein said inclined first boundary presents a  
2 concave shape to said energy beam.

1 19. The energy beam guide of claim 1, wherein said declined second boundary presents a  
2 convex shape to said energy beam.

1 20. The energy beam guide of claim 1, wherein said energy beam is refracted at said first  
2 and second boundaries.

1 21. The energy beam guide of claim 20, wherein an angle of refraction is greater than the  
2 angle of incidence at both said first and second boundaries.

1 22. The energy beam guide of claim 1, wherein a shortest distance separating said first  
2 region from said second region is in a range from 0.1 to 1000 microns.

1 23. The energy beam guide of claim 1, further comprising an optical element disposed  
2 between an energy beam source and said energy beam guide.

1 24. The energy beam guide of claim 23, wherein an energy beam receiving end of said  
2 optical element is sloped.

1 25. The energy beam guide of claim 23, wherein said optical element is formed from a  
2 substance that comprises said first region.

1 26. An energy beam guide, comprising:  
2 a first region having a first refractive index;  
3 a second region sharing an inclined first boundary with said first region, said  
4 second region having a second refractive index that is less than said first refractive  
5 index; and  
6 a third region sharing a declined second boundary with said second region,  
7 said third region having a third refractive index, where a predetermined distance  
8 separates said first and second boundaries.

1 27. The energy beam guide of claim 26, wherein said second refractive index is larger  
2 than said third refractive index.

1 28. The energy beam guide of claim 26, wherein said second refractive index is less than  
2 said third refractive index.

1 29. The energy beam guide of claim 26, wherein said energy beam guide forms part of a  
2 detection cell of an electrophoresis system.

1       30. The energy beam guide of claim 29, wherein said third region defines a detection  
2       portion of said detection cell.

1       31. The energy beam guide of claim 26, further comprising an excitation source and a  
2       detector.

1       32. The energy beam guide of claim 26, wherein said first refractive index is in a range  
2       from 1.47 to 1.61.

1       33. The energy beam guide of claim 26, wherein said second refractive index is in a range  
2       from 1.46 to 1.52

1       34. The energy beam guide of claim 26, wherein said second refractive index is 1.52.

1       35. The energy beam guide of claim 26, wherein said second refractive index is 1.472.

1       36. The energy beam guide of claim 26, wherein said third refractive index is in a range  
2       from 1.33 to 1.46

1       37. The energy beam guide of claim 26, wherein said third refractive index is 1.41.

1       38. The energy beam guide of claim 26, wherein said first region is an optical adhesive.

1       39. The energy beam guide of claim 26, wherein said first region is a liquid index  
2       matching fluid.

1       40. The energy beam guide of claim 26, wherein said second region is selected from a  
2       group consisting of glass and plastic.

1       41. The energy beam guide of claim 26, wherein said third region is a migration medium.

1 42. The energy beam guide of claim 41, wherein said migration medium is a polymer.

1 43. The energy beam guide of claim 26, wherein said inclined first boundary presents a  
2 concave shape to an energy beam.

1 44. The energy beam guide of claim 26, wherein said declined second boundary presents a  
2 convex shape to an energy beam.

1 45. The energy beam guide of claim 26, wherein an energy beam is refracted at said first  
2 and second boundaries.

1 46. The energy beam guide of claim 45, wherein an angle of refraction is greater than the  
2 angle of incidence at both said first and second boundaries.

1 47. The energy beam guide of claim 26, wherein a shortest distance separating said first  
2 region from said second region is in a range from 0.1 to 1000 microns.

1 48. The energy beam guide of claim 26, further comprising an optical element disposed  
2 between an energy beam source and said energy beam guide.

1 49. The energy beam guide of claim 48, wherein an energy beam receiving end of said  
2 optical element is sloped.

1 50. The energy beam guide of claim 48, wherein said optical element is formed from a  
2 substance that comprises said first region.

1 51. A detection cell, comprising:  
2       a substrate;  
3       a first cavity formed in said substrate, said first cavity having a first cavity  
4       sloped wall and configured to receive a first substance having a first refractive index,  
5       wherein said substrate has a second refractive index;

1                   a second cavity formed in said substrate, said second cavity having a second  
2                   cavity sloped wall and configured to receive a second substance having a third  
3                   refractive index; and

4                   a wall defined by a region of said substrate separating said first and second  
5                   cavities from each other by a predetermined distance,  
6                   wherein said first refractive index is larger than said second refractive index.

1       52. The detection cell of claim 51, wherein said second refractive index is larger than said  
2                   third refractive index.

1       53. The detection cell of claim 51, wherein said second refractive index is less than said  
2                   third refractive index.

1       54. The detection cell of claim 51, wherein said detection cell forms part of a detection  
2                   cell of an electrophoresis system.

1       55. The detection cell of claim 51, wherein said second cavity defines a detection portion  
2                   of said detection cell.

1       56. The detection cell of claim 51, further comprising an excitation source and a detector.

1       57. The detection cell of claim 51, wherein said first refractive index is in a range from  
2                   1.47 to 1.61.

1       58. The detection cell of claim 51, wherein said second refractive index is in a range from  
2                   1.46 to 1.52

1       59. The detection cell of claim 51, wherein said second refractive index is 1.52.

1       60. The detection cell of claim 51, wherein said second refractive index is 1.472.

1 61. The detection cell of claim 51, wherein said third refractive index is in a range from  
2 1.33 to 1.46

1 62. The detection cell of claim 51, wherein said third refractive index is 1.41.

1 63. The detection cell of claim 51, wherein said first substance is an optical adhesive.

1 64. The detection cell of claim 51, wherein said first substance is a liquid index matching  
2 fluid.

1 65. The detection cell of claim 51, wherein said substrate is selected from a group  
2 consisting of glass and plastic.

1 66. The detection cell of claim 51, wherein said second substance is a migration medium.

1 67. The detection cell of claim 66, wherein said migration medium is a polymer.

1 68. The detection cell of claim 51, wherein at least part of said first cavity sloped wall  
2 presents a concave shape to an energy beam.

1 69. The detection cell of claim 51, wherein at least part of said second cavity sloped wall  
2 presents a convex shape to an energy beam.

1 70. The detection cell of claim 51, wherein an energy beam is refracted at said wall.

1 71. The detection cell of claim 70, wherein an angle of refraction is greater than the angle  
2 of incidence at said wall.

1 72. The detection cell of claim 51, wherein a shortest distance separating said first cavity  
2 from said second cavity is in a range from 0.1 to 1000 microns.

1 73. The detection cell of claim 51, further comprising an optical element disposed  
2 between an energy beam source and said detection cell.

1 74. The detection cell of claim 73, wherein an energy beam receiving end of said optical  
2 element is sloped.

1 75. The detection cell of claim 74, wherein said optical element is formed from the first  
2 substance.

1 76. A method for making a detection cell, comprising:  
2 providing a substrate defining first and second cavities each having sloped  
3 walls and separated by a wall;  
4 filling said first cavity with a first substance having a first refractive index,  
5 where said substrate has a second refractive index;  
6 filling said second cavity with a second substance having a third refractive  
7 index;  
8 wherein said first refractive index is larger than said second refractive index.

1 77. The method of claim 76, comprising the initial step of selecting said first substance,  
2 said substrate, and said second substance, such that said first refractive index is larger  
3 than said second refractive index, and said second refractive index is larger than said  
4 third refractive index.

1 78. The method of claim 76, comprising the initial step of selecting said first substance,  
2 said substrate, and said second substance, such that said first refractive index is larger  
3 than said second refractive index, and said second refractive index is less than said  
4 third refractive index.

1 79. The method of claim 76, comprising the initial step of selecting a distance between  
2 said first and second cavities.

1 80. A method for detecting component parts of a sample, comprising:

directing an energy beam at a first region having a first refractive index; redirecting said energy beam towards a second boundary, where said redirecting occurs at an inclined first boundary separating said first region from a second region having a second refractive index; guiding said energy beam towards a third region that includes component parts of a sample, where said guiding occurs at a declined second boundary separating said second region from said third region; striking said component parts with said energy beam; and detecting energy emitted from said component parts; wherein said first refractive index is larger than said second refractive index.

81. The method of claim 80, further comprising the initial step of separating said sample into its component parts by electrophoresis.
82. The method of claim 80, wherein said redirecting and said guiding steps comprise refracting said energy beam, such that an angle of refraction of said energy beam is larger than an angle of incidence, at said boundaries.